

# DELIVERING MANAGED MOBILE BACKHAUL TO CHAD

SES and Tigo Tchad

## Case Study

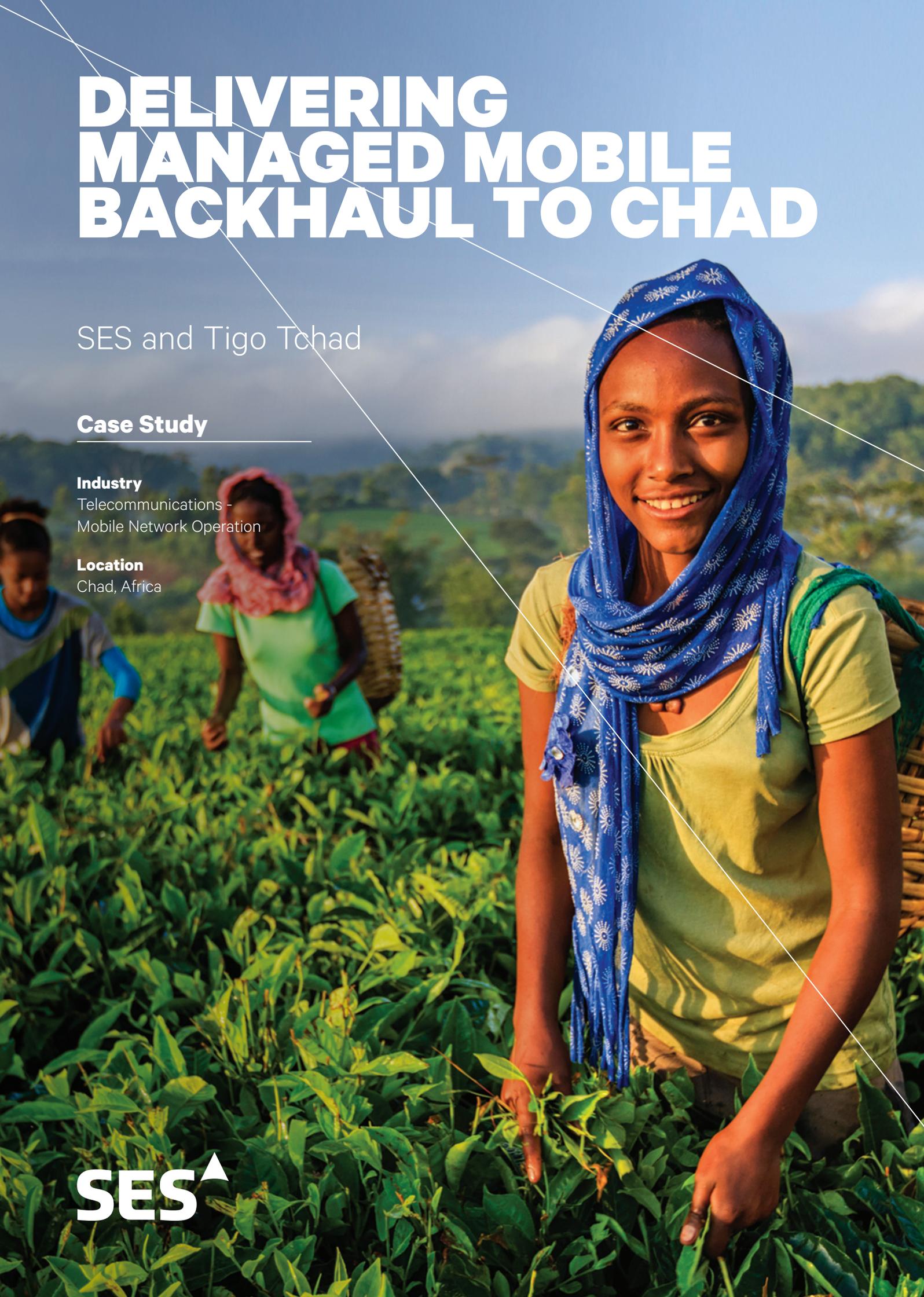
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### Industry

Telecommunications -  
Mobile Network Operation

### Location

Chad, Africa



SES

# REVITALISING CHAD'S MOBILE NETWORK

With many parts of the nation lacking robust power and transportation infrastructure, Chad remains one of the most challenging regions in the world to deliver mobile network services. Despite the difficulties, Tigo remains committed to supplying its customers with a reliable mobile service, and was the first entity to launch 4G LTE in the nation. Half of Chad's population are mobile subscribers, and Tigo serves half of those subscribers. Tigo's customers rely on their network for their very livelihood, with communications to customers, suppliers, and weather services critical for success in Chad's oil, agriculture, textile, and other industries.

As many sites became due for an upgrade, Tigo recognised that the lack of infrastructure and the necessity to keep downtimes to a minimum would be key challenges. Having previously worked with SES to take advantage of the O3b MEO satellite fleet, Tigo chose SES to integrate and manage a GEO satellite-based solution to overhaul more than 40 locations and establish an in-country teleport in just four months.

## REQUIREMENTS

The integrated solution delivered by SES needed to meet the following requirements:

- **Integration of satellite capacity and hardware, mobile network hardware, installation, maintenance, and logistics,** covered by a single service level agreement (SLA)
- **Replacement of both satellite and mobile network components** across more than 40 sites within four months
- **In-region technical expertise** and readily available satellite-based network capacity and facilities
- **Replacing single carrier per channel (SCPC) satellite network** with a dynamic SCPC
- **Migration from TDM to IP-based technology** to upgrade sites from 2G to 3G



# CHALLENGES

As a developing nation, Chad poses several major challenges to all industries, telecommunications included. Being landlocked, international communications and trade are simply more difficult in Chad. Many Chadian regions often experience drought conditions over their rough landscape. These and other factors have limited the proliferation of paved roads or reliable power to every community. The sites designated for overhaul were often quite remote from urban areas, or even the transportation and communications networks. Therefore, decommissioning the existing equipment meant that installers would have to pause work and relocate to another location if they needed to communicate with others.

Several of the sites involved included additional challenges, such as needing new cement pads, which in turn required additional hauling, labour, and construction time. Some sites were also shared with one of Tigo's competitors, which necessitated careful planning to avoid interference with their operation. In those cases, a new cement pad could not be poured, so a temporary satellite solution was required while the old antenna was dismantled and the new one could be installed on the same pad. Understanding that their customers could not tolerate long outages while work was being performed, each site's work needed to be pre-planned to minimise the downtime.



# SOLUTION

SES was selected because of its proven history of delivering highly reliable, managed satellite communications in Africa, having previously provided Tigo Tchad with an end-to-end network service on the O3b MEO network. As a global operator of the largest commercial satellite fleet, SES possessed the scale necessary to rapidly discover and vet local partners in order to integrate the importing, warehousing, installation, and maintenance required in Chad.

For the sites selected by Tigo for upgrade, GEO capacity was selected due to the ease of deployment of the terminals, and broad coverage of all locations. SES provides a dual-band satellite network of C-band and Ku-band to ensure a high availability backhaul connection.



## New teleport

To meet Tigo's requirement of utilising an in-country teleport for uplink and downlink services to the satellite, SES managed the construction and continues to operate and maintain a new teleport located near Tigo Tchad's headquarters in N'Djamena. The teleport was completed in three months, in time for all sites to come online to the new network within the following month. A Comtech Heights platform hub was chosen for the teleport for the network hardware and management software. Comtech Heights is fully certified for carrying voice and data for mobile networks, and the dynamic SCPC technology enables bandwidth to be reallocated to the various sites to meet changes in demand.

## Local expertise

The partnership of SES, Tigo Tchad, and the local engineers and technicians in the field were able to import, warehouse, deploy, and install all sites within the four-month timeframe. SES deployed a golden remote, a working copy of the remote sites, at the teleport in N'Djamena to quickly and repeatedly train the installers on the exact specifications needed at the real remotes. The local experts could navigate the difficult terrain and lack of infrastructure leading to many of the most remote sites, including crossing unbridged streams.

## Upgrade to 3G

Beyond the updates to the satellite network, the mobile network was upgraded at every site as well. Most of the sites were upgraded from 2G to 3G, but by using modern technologies, all sites are now 3G-ready when demand meets the supply. A major benefit from modernised hardware is that many problems can now be diagnosed – some even repaired – remotely. Given the difficulty the technicians faced just travelling to the sites, the savings in both time and money are significant with remote management.

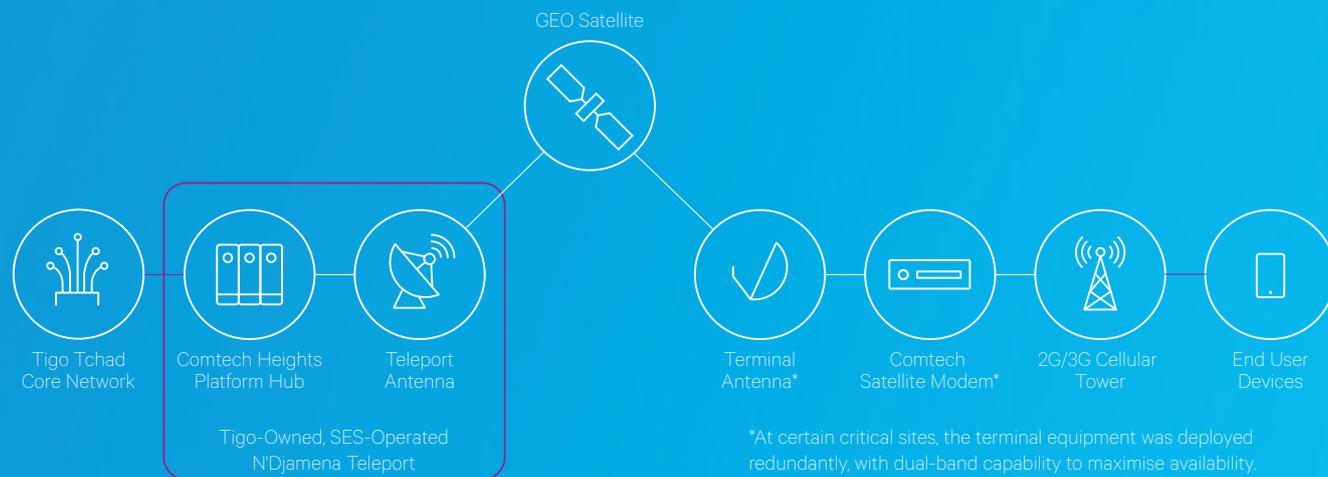
## Ensuring availability

SES's world-class Network Operations Centre (NOC) monitors the load, traffic, and uptime of Tigo Tchad's network. The multilingual team is available 24/7 and acts as the single point of contact for any issues Tigo Tchad may encounter. By continuously monitoring the network, including an automatic trouble ticket generator, the NOC is often able to discover and diagnose issues and remotely reboot or update systems before Tigo's customers have reported an outage, reducing downtime and improving the quality of experience for consumers.

At designated "critical" sites, the dual-band satellite solution was deployed with parallel, redundant satellite terminal hardware. At these sites, even if the primary satellite connectivity encounters a problem, the secondary link offers a channel to remotely diagnose or alleviate the issue. In the instances when remote troubleshooting cannot repair every issue, SES's partner ecosystem includes technicians located across Chad and assigned to the locations nearest to them for rapid response.

## Single SLA

Reducing downtime is a critical factor in SES's ongoing commitment to exceeding the expectations set out in its SLAs. Tigo Tchad and SES agreed upon a single SLA encompassing all elements of the managed satellite and mobile network, including mean time to repair (MTTR), guaranteeing 99.5% network availability. Although SES manages the network, Tigo retains full visibility into their statistics through the network management system (NMS) at the teleport and daily reports provided by SES's NOC.



## ACHIEVEMENTS

With customers' very livelihood on the line, a quick upgrade process and high availability were necessary targets for Tigo Tchad. By revitalising the mobile and satellite components of much of the network across Chad and developing a partnership with local technicians, SES and Tigo have changed the way consumers and businesses can communicate across the nation and internationally. Problems that previously could take multiple days to address can be detected and resolved within hours. Without an integrated, fully-managed end-to-end solution, the estimated time to deploy these upgrades was potentially up to two years, but by working with SES as an integrator of multiple partners, the entire solution was delivered in less than four months.

Furthermore, the deployed technology is inherently more robust and future-proof than the prior hardware. The sites that remained in a 2G operation through this process are now up to 3G standards, and can be easily upgraded when the time is right. The addition of the parallel satellite network at critical sites has significantly increased reliability and uptime which translated into better end user experience when using Tigo Tchad's network.

In addition to the international connectivity via O3b, SES now delivers the full domestic cellular backhaul service to Tigo Tchad. Additional sites have already been identified for a similar refresh, and Tigo Tchad is planning to deploy new sites to expand their coverage into rural areas in 2020. Tigo's customers have appreciated the upgrades with minimal downtime, demonstrated by a 30% increase in data traffic already reported at the upgraded sites.

By working in close partnership and collaboration with SES, Tigo Tchad has revitalised a significant portion of Chad's communications infrastructure, continuously improving the digital capabilities of its citizens and industries.

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For more information about the telecommunications services available from SES, please visit [ses.com/networks](https://ses.com/networks)

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